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The Agricultural Student

A MONTHLY MAGAZINE

DEVOTED TO AGRICULTURAL EDUCATION

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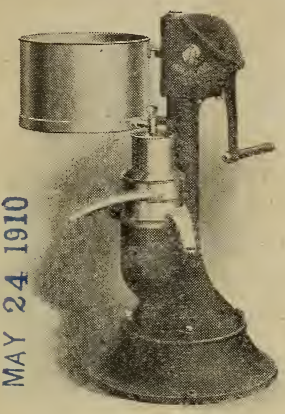

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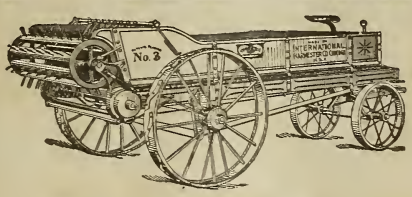

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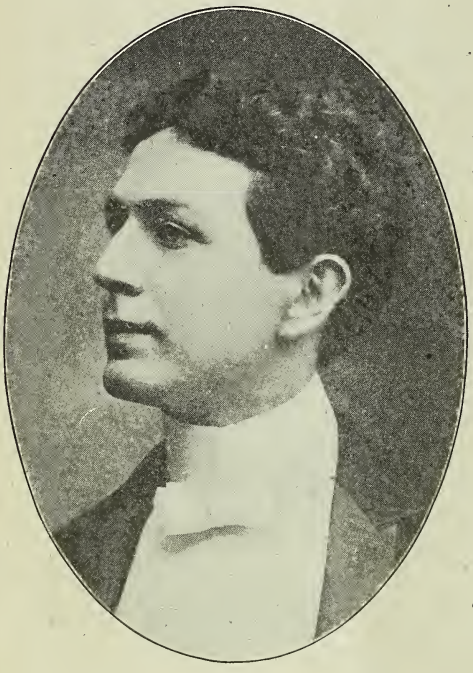

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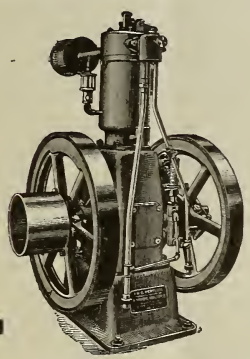

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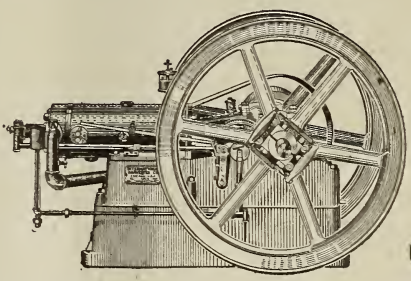

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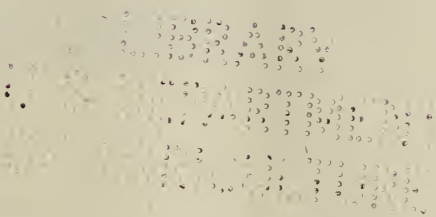

A MODEL PERCHERON

A Gift to the Agricultural College — Page 3

THE AGRICULTURAL STUDENT.

VOL. XIV. OHIO STATE UNIVERSITY, COLUMBUS, OCTOBER, 1907 No. 1

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EDITORIAL.

We may appropriately speak of this year's STHDENT as the "New Agricultural Student," for it is the first time that the students have had the entire management of the paper for themselves. They have taken all the responsibility for its publication and the help and encouragement of every student in the Agricultural College is needed to make the paper a success. If you have not yet joined the Agricultural Society and subscribed for the student you should do so at once.

THE AGRICULTURAL STUDENT is a magazine devoted primarily to agricultural education and in this role it aims to preach the doctrine of good farming and intelligent farming and to point out the advantages of an agricultural college training to the young man intending to choose agriculture as his life work.

In addition THE STUDENT hopes to be a medium by which graduates of the college and friends of the college may be kept informed of the work being done in the college and of the work being done by the graduates.

"The farmers are prosperous this year." "They never had so much money

before," are statements heard everywhere we go, and any one traveling through the country cannot fail to realize the truth of the statements. More improvements, building, draining, etc., are being made, and more machinery bought than ever before. County and state fairs have had record breaking attendances, which is a good indication of prosperity.

In spite of unseasonable weather this past spring and summer, and consquently smaller crops in many instances, prices have been and are so high that the crops are bringing large returns in money. Ohio farmers have in fact had good crops and received good prices for several years. How much of this is due to better methods of farming we cannot calculate, but we can confidently say that better farming is being done now than formerly and to the experiment stations, agricultural colleges and farmers' institutes the farmer owes most of his thanks for stimulating him to do better work and showing him newer and better methods of tilling the soil. The more intelligently farming is done the more certain become good crops, bringing greater prosperity not only to the farmer but to the whole country.

The young man intending to become a farmer should by all means endeavor to spend at least two years in our Agricultural College. With the splendid equipment which the O. S. U. Agricultural College now boasts, she is prepared to give a training in the more scientific methods of agriculture which cannot fail to be a great advantage to any man taking the course.

To those who are older and already farming there is offered the winter course. Although in existence but one year, the number attending and the enthusiasm manifested last year, indicates the need of such a course, and also shows that farmers are appreciating the fact that to be successful they must get in touch with advanced methods. Truly there is no place where a good scientific education is needed more than on the farm.

Gift to Agricultural College.

Our frontispiece this issue is a photograph of the bronze statute of a Percheron horse, which was presented to the College by the Percheron Horse Society of France.

During the latter part of 1906 this society voted to offer an object of art to the Ohio State University which should be used for annual competition in the department of Animal Husbandry. Each year the student proving himself the best judge of horses was to be regarded as its temporary winner, and to have his name inscribed upon it. The bronze figure of the Percheron is the result of their decision. M. Masson, the most noted bronze sculptor of France, was employed to execute the work. He first made a very careful study of Percheron form and character at Nogent-le-Rotron, and after finishing his model it was taken to Paris and cast by Susse Freres.

It was exhibited at the annual Percheron Society show at Nogent in France and received much favorable comment. Afterward it was shipped to the University.

The gift will be an inspiration to the students in animal husbandry at Ohio State and will promote increased interest in the Percheron in a state where this great breed of horses has long beeen the leading favorite.

This gracious and valuable gift from France is the result of a warm personal friendship existing between Mr. J. B. McLaughlin of this city, a former stu-

dent of O. S. U. and Mr. Aveline, president of the Percheron Society, and was made in recognition of the part Ohio men have played for over half a century in importing Percherons to America.

News Notes.

The Western Reserve O. S. U. Association held its sixth annual reunion at Chippewa Lake, Medina county, Ohio, Saturday, August 17, 1907. About thirty partook of the grand picnic dinner. At the business meeting E. T. Clapp was elected president, E. W. Nettleton, secretary and T. W. Brinker member of the executive committee. J. F. Cunningham, of the Ohio Farmer, favored us with a short speech. It was decided to hold the next reunion at the Experiment Station.

E. W. NETTLETON, Sec'y,
Medina, Ohio.

The new farm buildings for which $80,000 was appropriated during the winter of 1905 are rapidly being pushed to completion. They include a cattle barn, a horse barn and a judging pavillion. The cattle barn, which will be ready for occupancy by the middle of October, will have a capacity of about one hundred head and will be modern in every detail. One wing will be for beef cattle and another for the dairy herd, each class having all the latest conveniences for the ease of caring for the stock. A one hundred and fifty ton concrete silo has been constructed in connection with each wing, a root cellar provided and arrangements made for installing machinery for the guiding and mixing of all feed used. The horse barn will accomodate thirty-seven heard and have ample room for the storing and demonstration of all the necessary equipment which will be used in that connection. The judging pavillion will have a one hundred and ten foot tan bark floor with seats along each side, provision also being made in this building for the offices of the instructors in the Department of Animal Husbandry.

During the summer many very valuable animals have been purchased by Prof. Plumb for use at the University, including two imported Guernsey heifers direct from the Island of Guernsey, which were purchased from the estate of the late John W. Decker. A Devon cow was purchased from the extensive herd of Mr. James Buckingham, of Zanesville, Ohio. From Mr. H. M. Brown, of Hillsboro, was purchased an Angus steer of superior merit and much is expected of this animal in the show ring. In the swine department will be found two of the best living Berkshire boars, one by the great Premiere Rival and the other by a son of Baron Duke Fiftieth. The addition of animals of such good breeding will give the students an idea of the ideal type of the various breeds.

Dr. Carl W. Gay, assistant professor of Animal Husbandry in the University of Ohio, has been appointed professor of Animal Husbandry in the Veterinary Department of the University of Pennsylvania. He will also have charge of the administration of the stallion law of Pennsylvania. This law becomes effective the first of January, 1908; it is modeled after the plan of the stallion law that is in operation in Wisconsin. We all regret losing Dr. Gay for in the two years that he has been with us, he has proven himself to be a strong and able man in his department. He goes to his new field of work, however, with the best wishes of every student in the Agricultural College, although we all feel slightly envious of the college which has secured his services.

PROF. F. R. MARSHALL.

Prof. F. R. Marshall has been elected associate professor of Animal Husbandry to take the place left vacant by Dr. Gay's resignation. Prof. Marshall was educated at the Ontario Agricultural College, graduating in 1899 ,and was also given a degree of Bachelor of Science in Agriculture from Toronto University. From Canada he went to the Iowa Agricultural College where he pursued post-graduate work in animal husbandry and received a degree of Bachelor of Science in Agriculture from that college in 1900. From that time to 1903 he was assistant in animal husbandry to Prof. John A. Craig at the Iowa College. In 1903 he resigned to take charge of live stock feeding experiments at Brookmont Farms, Odebolt, Ia., where he remained some months, but later resigned to go to Texas with Prof Craig to act as associate professor of animal husbandry in the Texas Agricultural and Mechanical College. Upon the resignation of Prof. Craig, Prof. Marshall assumed full charge of the animal husbandry work. Prof. Marshall has won the reputation of being a teacher of more than usual ability. He has successfully taught many students the principles and practices of judging farm animals. As an investigator he has conducted a number of interesting feeding experiments in Iowa and Texas. As a judge he has officiated in some of the great stock shows of the country, notably, the Louisianna Purchase Exposition, the International and at various state fairs.

Ohio State University is fortunate in securing such a well equipped teacher for this department and we heartily welcome him among us.

PROF. OSCAR ERF.

The death of Prof. Decker necessitated the selection of a man to take his place as head of the Dairy Department. It was no small task to find a man to fill this place where Prof. Decker had been such a tower of strength. Prof. Oscar Erf, a former O. S. U. man, was finally selected for this place. Prof. Erf graduated from O. S. U. in 1899. For two or three winters he was student assistant in the Dairy Department during his college course. After graduation he spent some time in practical creamery work, and then went to the Kansas Agricultural College. This summer Prof. Erf has spent traveling in Europe, where he went to study dairy conditions of the Eastern countries. He will attend the International Dairy Conference at The Hague as one of the United States' representatives. He will be ready to take charge of the special dairy course which opens December 3.

R. H. Williams has been elected assistant in Animal Husbandry to take the place of William Palmer, who resigned to take up stock raising. Mr. Williams was born in Ontario, Canada, and graduated in 1905 at the Ontario Agricultural College. Last June he was given the degree of M. Sc. in Agriculture at the University of Illionis, after having taken a year of post-graduate work in animal husbandry at that insitution. He has been devoting his attention to animal husbandry study during the time of his college course. He was one of the live stock judging team of the Ontario College at the 1901 International. In 1903 he competed in the Massey Harris stock judging competition at the Toronto exhibition, and Ontario live stock show, where he won first place as judge of sheep, dairy cattle and swine, and third place as judge of beef cattle. Mr. Marshall taught live stock subjects for a time in the Mt. Hermon Boys' School in

Masachusetts. He has been helper with some of the best known herds and is quite familiar with the methods of feeding, fitting and preparation as followed in the large live stock shows of the country. We are glad to have Mr. Marshall with us, and trust that he may like his new position.

Chemistry in Agriculture.

R. C. COLLISON.

There are two ways in which chemistry appeals to the agriculturist. It broadens his knowledge of the life processes of plants and animals and affords information concerning the composition of the materials which he produces. In his actual practice on the farm a knowledge of the facts of chemistry aids the farmer in suggesting how he may feed his plants and animals,, how he may best make use of his farm manure, and also enables him to know the various causes which tend to destrop the value of the latter.

So many and important are the various applications of chemistry to agriculture that the different subjects involved have been grouped under the term "Agricultural Chemistry." This differs from other kinds of chemistry only in the subjects which it treats.

Fifty years ago little was known of agricultural chemistry. In fact men thought very little of agriculture as a science, and still less of chemistry, as a solution of agricultural problems. However, under the spirit of scientific investigation which inspired such men as Liebig, Bousingault and Warington, agriculture began to be viewed in a new light. New problems arose and new solutions to old problems were formulated. Under Liebig's guidance chemistry began to have greater significance in agriculture. Questions hitherto unsolved began to clear up when the light of chemical research was thrown upon them.

After the stimulus to the new science given by Leibig, other investigators took up the work, and today agricultural chemistry occupies a prominent position in the science of agriculture.

Probably no better idea of what chemistry is doing for agriculture and the various lines of work involved under the term agricultural chemistry can be obtained than by knowing what our experiment stations and the brueau of chemistry of the Department of Agriculture are doing along chemical lines. Our experiment stations, as is known, have their chemists who investigate chemical problems in relation to soils, fertilizers, feeding stuffs, etc.

Even greater in extent and more varied in character is the work undertaken by the bureau of chemistry. A brief outline will perhaps show what different lines of work they aim to carry out. The bureau is divided into divisions and laboratories according to convenience of arrangement. The aim is to confine the work to questions of public interest, and such other investigations as are referred to it by other departments of the government. Any inquiry, of interest only to an individual, or investigations which concern processes, etc., of interest only to manufacturers, cannot be taken up. In general the bureau is also unable to examine any miscellaneous samples sent to them. The only exception to this is in the case of road materials.

One of the first and most important divisions is the division of foods. Work is done with various foods purchased on the open market to determine purity and character of adulteration. At present a large amount of their work is in connection with food preservatives and their effects on nutrition, and also with the enforcement of the laws for imported foods. The analytical work is done in

collaboration with the Association of Official Agricultural Chemists, of which the chief of the division of foods is referee on adulteratives.

A second and very important division is the sugar laboratory. Here examination is made of sugar and other carbohydrates. The special work is that done in collaboration with the experiment stations on the effect of environment on the sugar content of beets.

The dairy laboratory examines all kinds of dairy products. Much of the work is done in collaboration with the Bureau of Animal Husbandry. Special work is done on various imported cheeses.

Another very important division is the so-called division of tests. This division makes standard tests of road materials, free of charge for any citizen of the United States. Clays, for brick, tile, etc., also cements, concrete, etc., are studied.

The drug laboratory examines all medicinal remedies as well as all chemicals used by the bureau. The contract laboratory examines all material purchased by the United States Department of Agriculture, as well as inks and other materials used by the postoffice department.

The leather and paper laboratory investigates the production of tanneries and leather, besides testing paper for use in the department.

The foregoing divisions have less bearing on agriculture but are all carried out by this bureau.

Another very important division is the plant analysis laboratory. This division colloborates with the Bureau of Plant Industry, and investigates the composition of plants, fertilizers, etc.

The micro-chemical laboratory studies foods, drugs, cattle feeds, paper textiles, etc.

Besides the nine divisions above a miscellaneous labortory and special investigation laboratory have been established, whose duty it is to study the influence of environment on the composition of plants, study of alcoholic ferments, ciders and wines. They also make investigations with insecticides and different waters of United States.

All the above divisions are parts of the Bureau of Chemistry and are doing a vast amount of work for agriculture.

In the Scientific American for September 14, some recent experiments are mentioned, in which the effect of tree roots on the growth of wheat was determined. From numerous experiments in this country it is known that fruit trees suffer and are often killed by grass growing close up to the trunks. Various reasons for this have been given, such as removal of plant food and water by the grass, also the liberation of carbon dioxide. These explanations, however, have been, at least in these experiments, demonstrated to be disconnected with the chief cause of injury.

After seven years' work it was concluded that the injury could be due only to poisonous substances formed by the grass roots. It is also known that it is difficult to secure a good stand of grass under trees. The author of the original article stated that in certain experiments there was distinct evidence, to show that plants do produce toxic conditions in the soil where they grow, and that in general these substances are more toxic to plants of the same species or nearly related ones than the plants not so related.

Effects of seedlings on wheat were tried. Injuries in connection with water and food supply were eliminated, and in every experiment the wheat suffered distinctly. Trees of various kinds were used

and the retarding influence on growth was noticed in every case. Trees of various kinds, however, differed somewhat in this influence, cherry being least active in checking growth and juice being most active. The conclusion was that the effect of trees in such cases, seems to be due to certain excretions toxic toward wheat.

The Labor Question on the Farm.

LEONARD L. SCOTT.

With the growth of our large cities and the development of the many manufacturing industries which have their centers there, there has come a great demand for men to fill these new places. The apparently high wages which are offered often overcome the judgment of the more conservative of our laboring men, and they are lead to the city in the hope of securing greater pay for less hours of work.

This movement from the farm to the city has been in progress for a number of years and with each succeeding year it grows larger. Conditions in the factory are quite different from those on the farm and the rules which hold in the former will not apply so closely to the latter.

In the shop the day's work begins at a fixed hour in the morning, and closes at a like time in the evening, while on the farm the chores must all be finished before the regular work of the day can be commenced, and they must again be attended to in the evening before the day's work is conmplete; so if a full day is to be devoted to the work in the field, these lesser jobs must be done before and after ordinary working hours.

It is these long hours which disgust so many men with farm work and so they naturally seek other employment where the day's work is limited and begins and ends at fixed hours.

Another reason why men are leaving the farm is because steady employment is not assured the year around and when the rush of summer work is past they are compelled to seek other means of earning a livelihood.

To overcome these conditions and place farm work on a par with that of the factory is the problem which is not presented to the farmer for solution. In the first place farm work must be made as attractive to the laboring man as the factory. Not only must his hours of labor be fixed but the remuneration must also be worth while. In addition steady employment must be furnished the year around either indoors or out. To meet these new demands the farmer should plan his work very carefully. The kind of farming he carries on should be regulated first by the character of his land; second by the nearness to good markets, and third by the transporation facilities offered by the railways, traction lines or waterways.

If his land lays level and the soil is rich as some river bottom land or if it is good upland with a good market close at hand, obviously grain farming would be best for him to follow. Work for the winter days could be found by feeding off some live stock and getting the farm tools ready for the spring work.

If the land is hilly and affords good pasture, dairying could be profitably engaged in, while if the soil is suitable and the place properly located with regard to exposure and influences which modify the temperature of the atmosphere, fruit farming may be profitable.

All these kinds of farming can be so planned as to afford continuous work to two or more men for the entire year.

Then the hours should be so arranged that the work will not become drudgery to the help. If the size of the farm justifies, one man may be employed to do the chores and other small jobs about the place while the other work may be looked after by some one else. If the farm doesn't justify the employment of a chore hand, then let some time be taken from the day's work to do the chores and in the course of a year the time will not be missed and just as much will have been accomplished.

Last but not least of the things the farmer must consider if he wishes to get labor for his farm is the wage to be paid. Men are not going to do twelve hours work for $1.50 when they can get $2.00 for fewer hours, and no right thinking person should expect them to.

Finally, the farmer should use better business methods on his place and so increase his income that he can afford to pay as much for his labor as the factory pays to its unskilled labor.

From what has been said before it appears to the writer that the three fundamental things the farmer must do if he is to retain his farm help is first, to give an increased wage, second, to have fixed hours for work and third to offer employment for twelve months of the year, and if these things are properly looked after it is safe to predict that it would not be long until the question of farm labor would be much less serious than it is at the present time.

An Original Ohio Forest.

R. C. LONG.

The area of Ohio that is at present covered with natural or original forests unmolested by stock or man is not large. The larger per cent of forests from forty to fifty years of age are in the southern part of Ohio owned by coal mining companies, the old timber having been cut off and used in the extensive production of coke. Perhaps there are not more than fifty or sixty thousand acres in all.

About forty acres of very valuable and beautiful young timber like this is located on "Highland Forest Farm," the splendid home of G. W. Heskett, an aged Shorthorn breeder of Morrow county. This little forest has several times been visited by forestry and experiment station men of Ohio and also by a United States forester. By these men it is claimed to be from the student's standpoint, one of the best examples of an original forest in Ohio. The variety of Ohio forest trees is also very complete. It was because of these excellent advantages for study that the Morrow County Forestry Association, here on the twenty-fourth of August, held their third annual picnic.

The well known history of this forest gives to it a double interest. Fifty years ago here proudly stood the aged parent forest, while today only a few evidences remain to remind us of the terrific cyclone which passed through that immediate section of the country and completely destroyed this timber. In less than half a century with the exception of a few great oaks this mass of fallen timber has entirely decayed. A few ash with broken trunks have sent up sprouts to a height of seventy-five feet. So forty-nine years ago this valuable timber lot was a mass of wreckage and ruin. Oaks four feet over, walnut, ash, maple and elm were mostly left to decay because of their low value at that time.

The soil that had been shaded for perhaps centuries was now warmed by the sun's direct rays. Under these new favorable conditions for plant growth thousands of young trees per acre had started to grow before the first summer was over. These young sprouts and seedlings had then just what is necessary in order to get valuable and interesting results "an even start." Ten years later this tangled mass of trees and vines had reached a height of ten or fifteen feet. The struggle for esistence had begun. No less than five thousand young trees of almost every description stood on each acre and the "Survival of the Fittest" could be the only applicable law. The struggle has been continuously going on and as a result at the present time there remains from four to five hundred trees for each acre, still too many for the most rapid growth conditions. This dense growth, however, is just what was needed to make valuable young timber. The young trees were compelled to reach up for the sunlight and as a result grew rapidly perfectly straight, many seventy feet high, and no branches whatever remaining on the long trunk. In the thickest parts many long straight poles fifteen to thirty feet high are still dying and unless the trees are taken out artificially this thinning process will go on for many more years.

So after waiting for fifty years and giving to the woodlot the use of good fertile land, the question naturally arises as to the value of the timber. In the forestry display at the State fair this fall there were exhibited cross-sections of trees, prepared by the Station, from different woodlots over the state, in order to hrow their rate of growth, value, etc.

The following is the data of an exhibit taken from the timber lot under discussion:

White Ash Plot—Number of trees per acre, 568; age of trees, 50.

White Ash—Number of trees per acre, 200; average height of trees, 49 feet; present value per acre, $111.40; value per acre ten years hence, $144.10; average annual income in value per acres, $3.27.

Sugar Maple—Number of trees per acre, 288; average height of trees, 38 feet; present value per acre, $79.25; value per acre ten years hence, $90.30; average annual income in value per acre, $1.11:

White Elm—Number of trees per acre, 64; average height of trees, 42 feet; present value per acre, $36.40; value per acre ten years hence, $37.15; average annual income in value per acre, $1.07

Black Cherry—Number of trees per acre, 16; average height of trees, 40 feet; present value per acre, $18.31; value per acre ten years hence, $27.46; average annual income in value per acre, 92 cents.

TOTAL FOR ALL SPECIES.

Present value per acre.....	$245 36
Value per acre ten years hence..	309 01
Average annual income in value per acre	6 37

Then by no means has the land occupied by this young forest has been lying idle. An annual average income of $6.37 per acre from land with low tax and with little or no other expense would perfectly satisfy the average farmer.

Although the present value per acre is by no means small, a very little well directed labor at the proper time would have materially increased the present value. Scattered here and there throughout the woodlot are several old and rugged beech trees that withstood the fury of the storm. For many years these beech trees have been decreasing in value, while their worth at best is not large. Each one of these trees it was estimated, take up at least one tenth of an acre that otherwise would be occu-

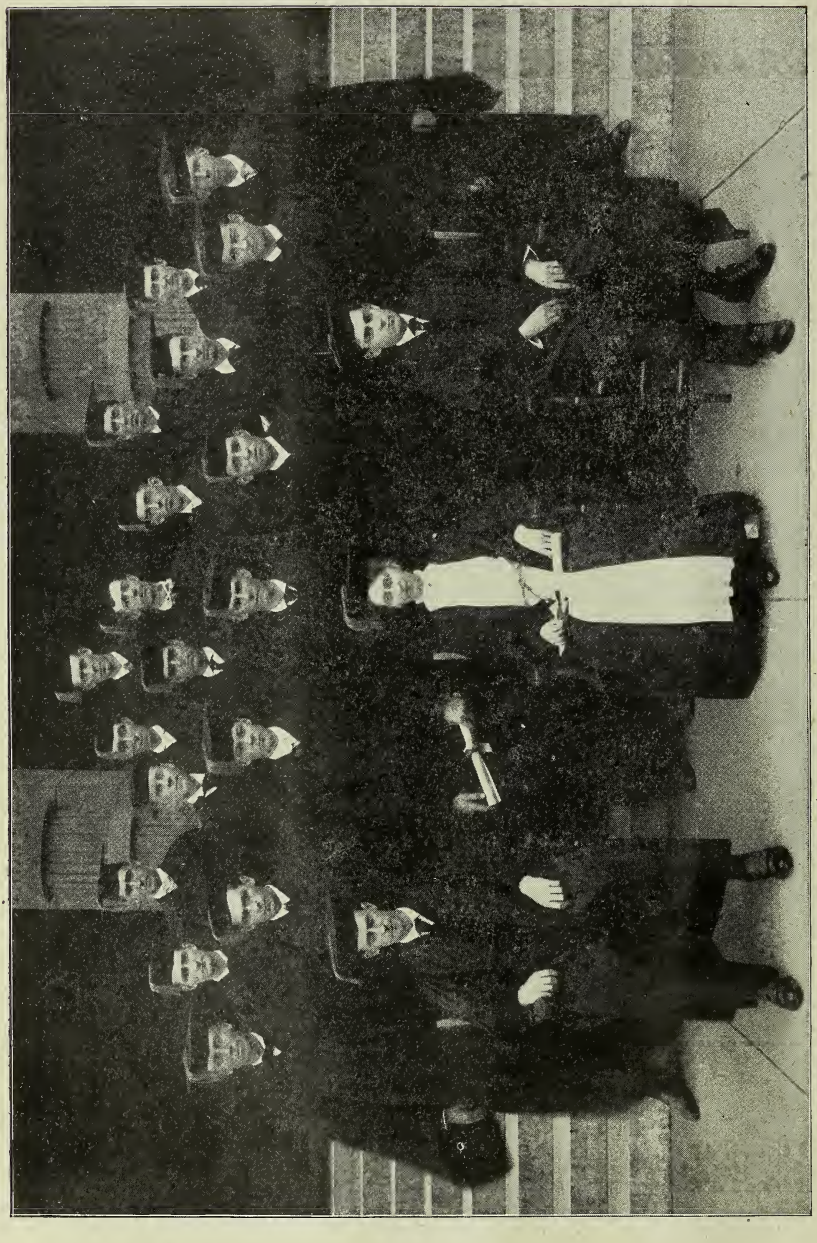

PHOTO BY BAKER.

THE CLASS OF '07.

pied with thrifty young timber. In the forestry display at the State fair a year ago the Station secured and exhibited cross-sections of the number of trees that should be using the one-tenth acre of land now occupied by a single beech. From these facts the Experiment Station concluded that it is costing annually at least twenty-five cents to support each one of the old beech trees. Again, while in some few places the trees are thin, in other sections there are too many, and how easily at the proper time part of these could have been transferred in order to make an even stand.

While, perhaps, the study of forest planting and cultivated forests is at present of more interest to STUDENT readers, the study of original forests is certainly interesting and worthy of some attention. The man who apparently neglects his woodlot by not keeping every sprout pastured down, may be doing the proper thing, for this young growth is necessary first, to grow timber, and secondly, to protect those trees partly grown. The University, we observe, has even changed its ways by letting the young trees grow, the foundation of a beautiful grove that may in time replace the old primeval forest.

Preservation of Fence Posts and Other Farm Timbers.

Experimental tests made by the government with a number of inferior woods have shown that it is practicable to subject them to preservative treatment by which they will be rendered durable and as lasting as the soundest oak in many cases.

This is of the highest importance in connection with the use of fence posts, telegraph and telephone poles, cross-ties and constructive timbers of many kinds. It is of special importance to farmers in many parts of the country, for with them the fence post problem is serious.

Almost every farmer in the South and East knows that the supply of locust, white oak, cedar and other durable woods has become so restricted in the last few years that their cost has become almost prohibitive. In the Middle West the supply of good post material always was limited while in many places in the far West it is becoming more and more expensive to build fences because good timber for posts is becoming very scarce. The fence post problem, therefore, appeals to the farmers of the whole country, and they will be benefited by any process by which a poor past may be made to give double or treble service.

The preservative treatment can be employed more successfully with certain kinds of wood than with others, but it fortunately so happens that the open-grained, quick growing, quick decaying timbers, are the easiest of all woods to treat. Among these are old field or loblolly poine of the South, lodgepole and western yellow pine, cottonwood, willow, buckeye, beech, sycamore and others in the West and Middle West.

Woods which decay most rapidly in their natural state, with few exceptions, are best adapted for preservative treatment. This is important because it renders cheap and abundant timbers available and make use of what would otherwise be wasted.

The process of treating farm timbers is simple, and the cost is low. The apparatus may be set up and operated by a farmer on his own premises, or two or more farmers or timber users may join and lessen the expense for each. The only apparatus required is an open iron tank, large enough to receive fence posts in an upright position. Shingles, stakes, and other small timbers may be treated in the same tank.

The cost of the treatment, after apparatus is ready, depends upon the size of the timbers and whether the entire posts or only the butts are treated, and the thoroughness of the treatment. Where freight rates permit the shipping of the preservative at a moderate expense, the total cost of a treated post of old field pine, lodgepole pine, cottonwood or similar timber, ought not to exceed that of a high grade post in its natural state, and is often less.

The government considers the investigations in the preservative treatment of timber of such importance that the business of one branch of a bureau in the Department of Agriculture—the "Office of Wood Preservation," in the Forest Service is given over entirely to the work of experiments in coöperation with railroad companies, mining corporations and individuals in prolonging the life of railroad ties, mine props, bridge timbers, fence posts and transmission poles. Advice and practical assistance is furnished all who request it of the Forester. The lengthening of life of timbers means the saving of thousands of dollars annually through doing away with the heavk expense of labor and cost of material for renewals.

A Trip to the Southwest.

BY ARTHUR H. M'CRAY.

Having spent a month in Southwest Texas the past summer, the writer feels that it will be of sufficient interest to the readers of THE STUDENT to give some facts concerning this state of such wonderful resources. In speaking of Texas, it is rather difficult to make general statements for the whole state, owing to the immense territory included in this southern Empire State, as it is now being designated.

The soil of Texas is, I believe, divided into five classes, of which the black, deep, fertile prairie soil takes first rank. It is this soil that abounds in fine crops of cotton and corn, and the soil that is found in the southern part of Texas, where these observations were taken. Here one sees field after field of snowy cotton, while pickers dot the field here and there, gathering in the fluffy commodity, which forms so large a part of the wealth of the South. Mexicans and negroes are employed to pick the cotton, and of the two classes, Mexican labor would seem to be more desirable, and in this reion one sees many more Mexicans than negroes at work in the cotton fields. The pickers receive 60 cents per hundred pounds, and a skilled picker will pick a bale of 500 pounds per day. The ravages of the cotton boll weevil have been quite serious this year, although it would seem that the matter was largely a local "scare," as the government reports 80 per cent. of an average crop for the month of August, and moreover at 14 cents and better per pound, the crop if only half a one, will bring the farmer as much as in years of good crops and consequent lower prices, as 8 to 10 cents per pound.

Considerable experimenting has been done to eradicate the boll weevil, but no spray or insectide has proven of any avail, and the only way of combating the pest with any hope of getting the upperhand is to plant early maturing varieties of cotton, and thus force the crop to the harvesting stage before the weevil can get in its work.

The average production of cotton for the state is .39 of a bale. Practically all of the cotton is made into cloth in other states, as yet, I believe, as the South has developed but few manufacturing centers. Besides the commodity known as cotton as we know it, there are other products of the cotton plant, which are of great value, and the utilization of

which gives rise to other industries. Thus there are the cotton seed mills, which take care of the seed, removed in ginning, and which utilizes what was formerly considered a worthless part of the cotton plant, fit only to be dumped into the river, and the man who could most quickly and lat least expense get the seed away was considered a genius. Now the seed is turned into a number of useful products, both the hull and kernel being used; from the latter the well known cotton seed oil being extracted, which being variously refined, forms a number of different oils, serving as many different purposes, as in cooking, the arts, etc. Cotton seed meal is well known as a valuable feed and fertilizer. The cotton plant itself is recently being used for its fiber, so that scarcely a part of this staple of the South, but what is being turned into some useful article of commerce. But enough for the present concerning cotton except to say that planting and cultural methods resemble those of corn, the cotton being planted in rows, and the ordinary two-horse corn cultivator is used for cultivating the cotton plant.

Formerly cotton was grown here as all over the South, almost exclusively, but since the diversification idea has taken hold, other crops are being grown profitably, and of these corn is an important one, and on every farm one sees corn grown in almost as great an acreage sometimes, it would seem, as cotton. The corn matures in June, and at this time the tops are cut away at the ear and stored away as feed, the remainder of the stalk being allowed to stand until the farmer has time to gather the ear. Fifty and sixty bushels to the acre can be grown without difficulty.

Irrigation is practiced to some extent in this section, and with very satisfactory results. The past summer has been an exceptionally dry one in Southern Texas, little rain falling for over two months, yet no complaint was heard, but rather on the contrary, the dry period seemed to be satisfactory, in that it gave splendid opportunity to market the cotton crop in good shape, while the corn crop matures before the dry period comes.

The writer had the privilege of frequent long drives over the country surrounding the city of New Braunfels, the county seat of Comal county, and the region is wonderfully beautiful from an agricultural point of view as well as possessing real artistic beauty. Just at present, however, the scarcity of rain has caused all pasture and grass lands to die and turn brown, but otherwise one sees only evidences of a rich and fertile soil.

As to fruit growing, this industry would seem to be only in its infancy, speaking for the state as a whole, and when the full realization that fruit of the finest kind can be grown in the greatest abundance dawns upon the people, Texas will certainly become famous for its fruit. The peach region of East Texas is already sufficiently famous to be known widely outside of the state.

Last, but not least, Texas produces more honey than any other state in the Union, and Nevada county honey is a far-famed commodity, and the strange thing of this important crop is that no trustworthy estimate can be made of it owing to the fact that a host of beekeepers ship honey out of the state and it is impossible to get an estimate of these numerous shipments aggregating millions of pounds. Uvalde ships more honey than any other point in the world, and millions of pounds of the garnered sweetness are sent away from here annually.

The two main sources of honey are mesquite (me skeet) and cotton, the former yielding under favorable conditions

two crops of honey per year, while the cotton begins yielding nectar in July and continues until frost.

One may frequently see colonies yielding 200 pounds of honey, while an average of 100 pounds for an apiary of several hundred colonies may well be counted upon.

Finally a word as to the people and manners. One needs to taste southern hospitality and come in contact with gentle southern manners in order to appreciate them, and the days in which every one carried a pistol, if such a time ever was, has passed away. One cannot purchase a pistol in Texas, and I am informed that over half the counties of Texas are dry counties. Some of the finest schools and universities to be found anywhere are found in Texas. The villages are certainly worthy of emulation by northerners. Beautiful houses well painted, surrounded by nicely kept lawns, and broad, shaded streets, and inviting city parks were found to be the rule with few exceptions. In fact this southern country seems to be one of wonderful resources and consequently equally wonderful opportunities, and in the words of Horace Greely with a slight modification, we believe it to be good advice to say, "Young man go Southwest."

Dairying as a Proposition.

H. E. WOODS.

The outlook for a dairy farmer was never more brilliant than at present. You may consider the dairy cow as you wish but there is not a single chance to turn her down as being an unprofitable investment.

First consider her product upon a commercial basis and never has there been such a cry for milk to supply the city retail trade as at the present time, and the creamery men are scouring the country for new district from which to draw their needed supply.

Chicago is gradually pushing up into Wisconsin and Minnesota creamery regions for her daily milk supply; the eastern city territory is stocking up heavier in order to supply the demand; the West and Pacific Coast region is becoming one of the most important sections of production for the eastern and export butter trade, and even the sluggish South is gradually awakening up to the possibilities in dairying. Within our own state the larger cities are continually infringing upon each otther's territory for their supply. Pittsburg is going up into Cleveland's district, Cleveland is coming down into Columbus' district and Columbus is continually enlarging her drawing radius but is limited on the south by Cincinnati's demands. This inevitable competition has resulted as most competition, in an increase in price for the producer.

The new activities in the demand for milk are due to the intelligent American homes, which recognize the fact that there is only one true liquid food. Our progressive people will continue to recognize this fact and with such a logical fact established, it will be next to impossible to lessen the rapidly increasing demands for pure milk.

Considering the local conditions of Columbus as an average indicator of the country, we find that the dealers' popular tale of woe about his business is, "My trade is not limited by the demand but by the supply of milk," and it matters little whether he is selling standardized, sanitary, certified, sterilized or what class of milk, they all complain alike.

There are three major considerations attached to dairy farming:

1. The certain, regular, daily income from the cows product alone, with the retention of the wealth produced.

2. The increasing value of a dairy farm by the addition of fertility to the soil.

3. The establishment of a pure bred herd whichcommands admiration for the occupation and an increased valuation upon the results of one's labors and a more general satisfaction.

A dairyman's interest on his money invested in live stock begins to appear when the females are from two and one-half to three years old. At this age a heifer, properly bred, will pay for her feed and fair wages for her care and will continue to grow into productivity and value until her prime is reached at from five to eight years old when she can be sold for an attractive figure.

There are very few divisions of live stock industries which will declare a comfortable dividend to their owner for their keeping and yet represent a potential capital.

Farming in any of its branches is a financial business proposition and like every other business we must consider the farm as capital invested and the dividends declared upon the same will be dependent upon the earning ability of the investment. The foundation of all successful speculations are also based upon the increase in valuation when considering profits and likewise a farmer's investment should be based upon the same foundation. Practically all soils can be improved by the addition of animal manures, consequently such an improvement will increase the valuation of the farms, however, the rate of improvement of soils by the addition of manures will deanimal receives. Dairy cattle as a rule are fed larger quantities of nitrogen rich pend to a great extent upon the feed the concentrates than any other class of animals, resulting in the production of excrete containing larger quantities of valuable plant food than from any other class of live stock. All animal manures have a double action upon the soil; they improve the mechanical condition as well as add chemical elements; at the same time that you get this improvement you can enhance the valuation of the soil by a better quality of manure applied.

A dairyman's third consideration with reference to his occupancy should be the establishment of a pure bred herd. Blood in a dairy cow with reference to her production is of as much significance as blood in a race horse performing on a race track. The reasons for breeding pure bred dairy cattle are as self evident as for any other class of animals. Especially is this true after reviewing some of the prices obtained at different public and private sales where the average prices rank well with any other pure bred cattle sales. As producers you never heard of grade cattle making records which would begin to compare to those of Aggie Cornicopia Pauline who made 32.03 pounds of butter in seven days. Yeksa Sunbeam, who made over 1,000 pounds of butter in a year, and of Columtha Fourths Johanna who now holds the world's record, making 32 pounds 14 ounces of commercial butter in seven days, and 129 pounds 5 ounces in thirty days, 243 pounds 2 ounces in sixty days.

With such records established a pace has been set which ought to create sufficient interest and consideration which would be worth any man's time and labor to try and equal or even surpass. The limit has not been reached for just as soon as any one proves himself to be a better breeder and a better feeder than those of the past, new records are sure to be established.

A rural proposition considered from all points of attack which can cope with dairying is indeed a profitable one. Any young farmer who wants to be free from the factors ruling prices, such as the foreign appetite for beef, speculative fluc-

tuations in lard markets and the imposing or repealing of the tariff on wool, had beter seriously consider dairying, where your product is never looking for a market and your income is daily and certain.

How to Look for the San Jose Scale

Although the San Jose scale has been in Ohio for over ten years now, there are comparatively few people outside of the regular entomologists who can recognize it before it has become so numerous on a tree or shrub as to make its destruction necessary. Even among nurserymen, who would be supposed to be familiar with it, there is a surprising lack of knowledge as to the scale, and not one in ten can recognize it. In order to effectively control the scale, the infested tree must be treated before the scale has become so numerous as to completely cover the tree. If left until this stage has been reached the ax and a hot fire are the only remedies. With this fact in mind the writer of this article intends to give a few hints as to how to search for it, so that the orchardist or owner of a few trees can detect it in time to apply a remedy and save his fruit tres.

The first essential is to provide a hand lens or magnifying glass of some kind. One can be purchased for a dollar which will answer the purpose very well. It is well for the inexperienced man not to get a glass that magnifies too highly as this will mean a close focus making the glass difficult to use.

Choose a bright day along in August or the first part of September as the scale is easiest to find at this time. They are in all stages of maturity and the different stages show characteristics which makes it easy to distinguish the scale.

Choose the peach trees first if you have any. San Jose scale almost invariably will appear first on old peach trees. They are especially subject to its attacks and they apparently thrive better on the peach and reproduce more rapidly than on any other variety of fruit trees. The peach is also very susceptible to its attacks and after it becomes infested, will live but a few years. Look for the young scale first on the peach as the old scale are hard to see, being so nearly the color of the bark. The young will appear as very minute yellow points, almost too small to be seen with the naked eye. Focus your glass upon them and they can be plainly distinguished as almost circular in shape and of a bright yellow color. Some of them which have just been born, will be seen to be slowly crawling around, hunting a place to settle. They move around but for a very brief time, but during this time all the spread of the insect is accomplished. They are so small that the wind will blow them around like dust; birds and insects will carry them on their lodies or legs, and in fact they can most easily be scattered.

As said above, the insect crawls around for a few hours and finding a place to settle it pushes its sucking tubes through the bark, commences to secrete a scale and loses its legs and consequently all power of locomotion. After noticing the newly born young, look around next for those that have recently settled. The young scale is at first almost white, gradually assuming a darker ashy color as it approaches maturity. The scale is nearly circular in outline, about the size of a pinhead when full grown and in the center of the scale is a yellowish spot surrounded by a ring or depression. This

can be easily seen with the aid of the glass and it is a sure indication that the scale is the injurious San Jose. The yellowish color of the nipple is no so apparent on the older, fully developed scale or those which have wintered over. The above description applies to the female. The male is much smaller and the scale darker. If you have found the young scale, or think you have, look for the old ones. Take a knife and scrape over the bark on the limb; if the old scale are there the scale will be scraped off and the yellowish insect itself will be seen. It is almost disc-shaped and jelly-like, without appendages of any kind and about the size of a small pinhead.

In you wish to look for scale in the winter time on peach, a good indication is the small white spots on the bark where the old scale have fallen off. If these are seen the scale can be found by scraping the bark as explained before.

After the peach look to the young apple trees. Here the old scale is easily seen on account of the lighter color of the bark and because of a red discoloration of the bark where the scale has settled on the younger twigs. If the scale are few these red spots furnish a good method of detection. After they become thick they are easily told on anything.

If none are found on the peach or young apple, there is not likely to be any found on the older apple trees. They increase but slowly on old apple trees and in fact are seldom found on them unless they are very bad in the community.

Certain varieties of shrubbery should be examined, notably the Japanese quince and lilac. Look also over the Mountain Ash carefully as it is very liable to become infested.

The careful orchardist or fruit grower will make a thorough examination of his orchard every year. The scale is getting widely spread over the country and it behoves the owner of trees to be on his guard and be prepared to fight it as soon as it appears.

In case of doubt the Division Orchard and Nursery Inspection should be consulted. If application is made they will send a man who will examine the orchard free of charge. However, the scale is going to be with us and all fruit growers should be able to detect it and know how to fight it.

In the next number of THE STUDENT there will be an article on controlling the San Jose scale which will give the best methods found up to date.

Fall Work in the Garden.

The fall months are the months to begin to prepare for next year's garden. Most of the crops are off now and the weeds which are going to seed should all be cleared off and all remains of this year's crops removed. The habit of allowing the weeds which have come up after the removal of the crop to go to seed and seed the ground is one that will cause a great amount of extra work. Weeds in a garden are at best a bad proposition and to carelessly allow the ground to become seeded is poor management.

The manure to be used should be put on this fall and the ground ploved in preparation for early spring planting. By this method the soil can be worked some days earlier in the spring. The plan of covering the ground with manure during the winter and plowing in the spring is one that is sure to lose time when a few days' delay may means many dollars in profits. A heavy coat of manure keeps the soil wet and cold and besides the de-

lay in getting it prepared for the crop, it celdom can be gotten in condition. Fall plowing is certainly best for the gardener and should be followed is possible. See that all drains are in good shape and their outlets well opened up. To get the garden in early, the soil must be well drained so as to warm up quickly. A wet soil is a cold soil and early crops want a warm soil.

If any hotbeds are to be made, good soil and compost should be collected in a protected place. Ofter when time comes for this work the soil and compost heap are so wet that no suitable material can be secured, thus causing delay.

If any plants are to be wintered over in cold frames, the gardener should see that the frames are tight and that he has ample means of protecting them in very cold weather. Wintering cabbage plants over in this way is an excellent plan to get early and very hardy plants, superior to hothouse plants.

One great secret in making money in gardening is to be a few days ahead of your competitors. Preparation in the fall is one way of securing this advantage.

Some of the Agricultural Conditions in Southeastern Ohio.

BY J. H. COX.

The formations of Southeastern Ohio belong to the carboniferous system and are young in age, speaking from a geological standpoint, for the hills are, as a rule, sharp in outline and bounded many times by steep banks. In certain portions and localities the topography is not so rough and broken as in other parts. Many of the steep hillsides are still covered with woods, but almost all of the valuable timber has been cut off. Formerly, poplar, black walnut, oak, hickory and chestnut were found in abundance.

The soil has largely originated from sandstones and shales with a sprinkling of limestone found here and there in broken strata. The sandstone soils are quite aboundant and are usually found over a solid sandstone bed. There is considerable humus found in the virgin soil and there is evidence of this for several inches into the ground; but, in a few years after the land has been put under cultivation, the humus disappears and the soil is much lighter in color. If one takes a trip across the state, he will see quite a contrast between the soils of the glaciated and non-glaciated region. In the western part of the state those rich, black soils are found and it is here that an ideal condition exists for agriculture. The conditions are different in the eastern part of the state, for not only is the origin dissimilar, but the topography, which has already been discussed, is not conducive to the best agriculture. If a very careful system of farming is not carried out, the best part of the soil is washed away in a few years. The principal of cultivation is to till the field in such a manner so as to give the surplus water which runs off the least volume with the smallest velocity possible. The general method, however, is to work the field the easiest way possible which is very often quite hard at that.

The usual rotation is corn, wheat and clover. Quite frequently oats is put into the rotation. A few of the farmers who are careful dealers and good judges of stock do not plough any, but have all their land in pasture. This is an excellent method of farming this country; for the most of it is good grass land and is a crop that can be raised in competition

with the richer lands of the West. Fruit can be raised here with fair success and could be made a thriving industry if the intelligent farmers would take hold of it. Of course there are regions here which are too far from the markets or any line of transportation to make a success of this line of business. And again near the mining towns there are excellent locations for fruit with the best markets in the country close at hand.

Noted geologists do not predict a very bright future for this country after the mineral wealth has been exhausted. Some educators advise the government to buy the land and plant it out on forest reserves, but this will not very likely occur. The place is not valuable on account of its poor soil and rock hillsides, or on account of its lack of wealth, but because it is home and the associations which the latter bring.

ALUMNI NOTES.

The Class of .07—Where They Are and What They are Doing.

Maurice E. Laird is farming at his home near London, Ohio.

Howard J. Campbell is farming at his home near Hendrysburg.

George Crabb is in the soils department at Washington, D. C.

W. J. Davis is assistant in agricultural chemistry at the University.

Ira G. McBeth is taking some post-graduate work at the University.

Thomas F. Hamilton is engaged in farming near Brownsville, Ohio.

H. C. Green is in the soils department at the Ohio Experiment Station.

E. J. Petrey has been elected as assistant in botany at Cornell University.

R. L. Shields is assistant to A. B. Graham in agricultural extension work.

E. J. Kitchen is engaged in stock farming on his farm east of Springfield, O.

George Hyslop is assistant in the agronomy department at the University.

William Palmer has gone on the farm and will make stock raising his specialty.

J. C. White is assistant editor of the Farm and Fireside, published in Springfield, Ohio.

Orma J. Smith is assistant in horticulture at Iowa Agricultural College at Ames, Iowa.

H. C. George is working in the soils department of the Ohio Experiment Station at Wooster.

L. H. Fox is running a dairy on his farm near Mantua. He was married last spring, just before graduation.

E. C. Richey has recently received an appointment to a position in the Bureau of Plant Industry at Washington, D. C.

F. D. Heckathorn will work for the State Board of Agriculture this winter as assistant in orchard and nursery inspection.

John Chester McNutt is a manager on the Hartman Stock Farm. He was married this summer to Miss Huntington, of Columbus.

E. L. Bowser, '06, is located in Pennsylvania. He is interested in a creamery in that state.

R. C. Wallace, B. Sc., '06, was also a visitor during Fair week. He is stationed at the Experiment Station.

M. O. Bugby, B. Sc., '03, was visiting the University State Fair week. He is at the Ohio Experiment Station.

Frank Rubens, '04, visited the University this fall. He is farming and intimates that he is quite successful.

T. L. Wheeler, '05, was in Columbus attending the State Fair this fall. He is the Agricultural Editor of the Chicago Drovers' Journal.

J. W. Hammond, '06, is another of the boys who have settled down to farm life after completing their course. For such men we can predict great success.

Prof. C. K. McClelland, '08, M. Sc., Cornell, '02, is in charge of the Kansas sub-experiment station. He was a visitor at the University recently.

W. A. Martin, '05, is in the stock raising business in Hardin county. Mr. Martin is establishing a reputation as an able judge of live stock and officiates at many of the county fairs.

Dr. C. W. Gay, who was assistant professor in Animal Husbandry at the University during the last two years was in Columbus Saturday on his way west where he will judge horses at Kansas City and St. Joseph, being employed a week at each place.

About Buying Feeders.

Are you thinking of buying stocker or feeder cattle, sheep or lambs? If so the advertisement of Clay, Robinson & Co., appearing in this issue, will interest you. They show therein clearly and concisely why it will pay you to place your order for feeders with them. The above firm is known from one end of the country to the other as the largest and most successful live stock concern in the world. Many people, however, think of them mainly as commission salesmen only, overlooking the fact that they make a specialty, at each of their eight houses of purchasing for their clients all classes of stockers and feeders, both cattle and sheep, on orders. The advantages of this service are many. If you place your buying order with Clay, Robinson & Co. you secure your stock at the lowest figure at which shrewd buyers, skilled and experienced in this particular line, and who take advantage of every market opportunity, can get it; you have the benefit of their judgment in selecting well-doing, profitable stuff to feed, and you avoid the expense of railroad fare, hotel bills, loss of time, etc., incident to a personal trip to market, which is wholly unnecessary if you avail yourself of the Clay, Robinson & Co. buying service. The bulk of their orders for feeders are received by mail, and in the majority of cases the person ordering never sees the stock until it is unloaded at his railway station. Read the advertisement appearing on another page, and if you want feeders of any sort send your order to Clay, Robinson & Co., or write them at any of their houses.

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At the last Ohio State Fair we won every possible first prize but one, with our Percheron and French Coach Stallions.

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Come and see us or write us if you want a good stallion.

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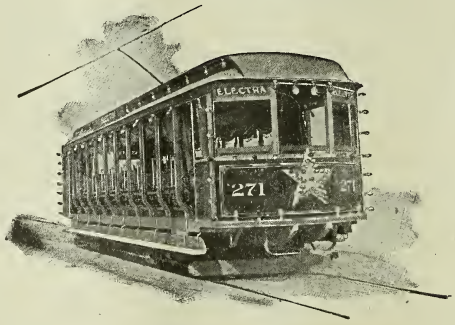

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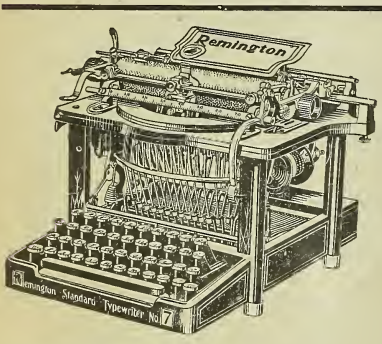

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